UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,218	02/17/2004	Xiao-Peng Liang	WJT08-0022D1 (JSF001-0076	9463

7590 12/20/2005

William J Tucker
14431 Goliad Drive
Box #8
Malakoff, TX 75148

EXAMINER	
JONES, STEPHEN E	

ART UNIT	PAPER NUMBER
2817	

DATE MAILED: 12/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/780,218	LIANG ET AL.	
	Examiner	Art Unit	
	Stephen E. Jones	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Claim 2 was previously canceled. Accordingly, misnumbered (re-presented) claim 2 has been renumbered as Claim 8.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 3-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation of the tunable dielectric material fabricated without heating to a temperature just below the eutectic temperature is not described in the original disclosure and thus is new matter.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1, 3-6, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al. in combination with Dimos et al., Mee, and Ishizuka et al. (all of record) for the reasons of record.

Miyazaki (Fig. 34) teaches a high frequency filter including: a main microstrip transmission line (31) (Claim 5); conductor ribbons (14) are coupling mechanisms (which can be considered inductive loops since ribbon conductors have inductance values and have an arc shape (such as shown in Fig. 34) which meets the term loop in its broadest meaning) (Claim 4) to connect microstrip resonators (110) having

capacitors (13); the resonators are ¼ wavelength apart (Claim 6) (see Col. 3, lines 38-42), and the filter is capable of notches (e.g. see Fig. 18).

However, Miyazaki does not teach that the capacitors are electrically tunable capacitors such that the resonators are tunable, that the capacitors are tunable dielectric varactors; that the varactors have a substrate with a first dielectric constant and having generally a planar surface; that the filter is two filters (as transmit and receive filters) each used in a wireless telephone diplexer coupled to an antenna; or that the tunable dielectric is a composite (Claim 1) e.g. BSTO-CaTiO3 (Claims 3 and 8).

Dimos et al. discloses a tunable varactor (Fig. 9) which comprises a substrate having a first dielectric constant and has generally a planar surface; a tunable dielectric layer having a second dielectric constant greater than said first dielectric constant; and first and second electrodes positioned on a surface of the tunable dielectric layer opposite the generally planar surface of the substrate and a gap separating the electrodes (e.g. see Col. 7, lines 4-10 and Col. 8, lines 43-50). Dimos also teaches that the tunable material can be barium strontium titanate (i.e. a ceramic composite BaSrCaTiO3) (i.e. BSTO-CaTi03, e.g. see Col. 2, lines 57-59).

Also, note that only the final product structure is given patentable weight in an apparatus claim (i.e. the method limitations of Claim 1 are not given patentable weight), and nothing in the present apparatus claims is materially different from the rejections below.

Mee provides the general well-known teaching of providing transmit and receive circuits in a diplex arrangement including filters.

Ishizuka provides the general well-known teaching of using a transceiver in a mobile phone.

It would have been considered obvious to one of ordinary skill in the art to have substituted tunable dielectric varactors such as taught by Dimos in place of the fixed capacitors in the Miyazaki filter, because it would have provided the advantageous benefit of variable capacitance instead of fixed capacitance and thus tunability of the resonators of the filter, thereby suggesting the obviousness of such a modification.

Furthermore, it would have been considered obvious to one of ordinary skill in the art to have used the filters in a wireless phone having a diplexer (such as taught by Miyazaki and Mee), because it would have provided a well-known filter means having the advantageous benefit of a common/shared antenna of the diplexer between the receive and transmit circuits, thereby suggesting the obviousness of such a modification.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zappala in combination with Mee, Ishizuka et al., Miyazaki et al. and Dimos et al. (all of record).

Zappala (Fig. 4) teaches a notch filter connected to an antenna including a bandpass filter between a termination and a circulator.

However, Zappala does not explicitly teach that the filter is used in the transmit and receive sides of a diplexer circuit of a wireless phone, that the filters include at least one tunable dielectric varactor having a composite tunable dielectric material.

Also, note that only the final product structure is given patentable weight in an apparatus claim (i.e. the method limitations of Claim 7 are not given patentable weight), and nothing in the present apparatus claims is materially different from the rejections below.

Mee provides the general well-known teaching of providing transmit and receive circuits in a diplex arrangement including filters.

Ishizuka provides the general well-known teaching of using a transceiver in a mobile phone.

Miyazaki (Fig. 34) teaches a bandstop/pass filter as described above (Fig. 34). Since a bandstop filter includes regions that not only stop, but also regions that pass bands of ranges of frequencies, it thus can also be considered a bandpass filter.

Dimos teaches a tunable varactor as described above.

It would have been considered obvious to one of ordinary skill in the art to have included two notch filters such as taught by Zappala in a diplex circuit of a wireless phone such as taught by Mee and Ishizuka, because it would have provided a well-known RF transmit and receive filter means for a wireless phone having the advantageous benefit of a common/shared antenna of the diplexer between the receive and transmit circuits, thereby suggesting the obviousness of such a modification.

Furthermore it would have been considered obvious to one of ordinary skill in the art to have substituted Miyazaki's filters in place of the generic bandpass filters of Zappala, especially since both are for RF frequencies including microwaves and thus would have been considered a mere substitution of art-recognized equivalent radio frequency bandpass filter means.

Additionally, it would have been considered obvious to one of ordinary skill in the art to have substituted tunable dielectric varactors such as taught by Dimos in place of the fixed capacitors in the Miyazaki filter, because it would have provided the advantageous benefit of variable capacitance instead of fixed capacitance and thus the advantage of tunability of the resonators of the filter, thereby suggesting the obviousness of such a modification.

Response to Arguments

2. Applicant's arguments filed 11/21/05 have been fully considered but they are not persuasive.

Applicant argues that the present invention does not require the method steps of Dimos.

Applicant's argument is not convincing, especially since the new limitations do not appear to be supported by the original disclosure. Also, the method steps in the apparatus claim are not given patentable weight since only the final product structure is patentable, and nothing in the present apparatus claims appears to be materially different from the rejections above.

Applicant also argues that the rejection of Claim 7 provides mere conclusory statements of motivation and that it would be very highly unlikely to combine four references.

In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

In response to applicant's argument that the references do not explicitly teach the motivations, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Furthermore, it has been well-established that making an apparatus adjustable is not patentable, especially when there is an art-recognized need for the capability of adjustment (see MPEP 2144.04 V. D.). In the filter/resonator arts, tunability by adjustment means has a well-known art-recognized need for providing frequency tuning. One such well-known means for tuning filters and resonators is by tunable capacitors or varactors. Also, the combination of Mee, Ishizuka and Miyazaki providing a diplexer having receive and transmit sections with a shared antenna is extremely

routine in the communications art, and Applicant has not provided any convincing reason why these reference's teachings should not be combined.

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen E. Jones whose telephone number is 571-272-1762. The examiner can normally be reached on Monday through Friday from 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Pascal can be reached on 571-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

STEPHEN E. JONES
PRIMARY EXAMINER

SEJ